AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 5

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0001	21-Apr-2003	W81EWF-3070-2277	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
VBURG CONSOLIDATED CONTRACTING CHAMPAIGN OFFICE P O BOX 9005 CHAMPAIGN IL 61826-9005	DACA42	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. DACA42-03-R-0021
	X	9B. DATED (SEE ITEM 11) 15-Apr-2003
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

TECHNICAL EVALUATION OF NEW BIOFILTER TECHNOLOGY TREATING XYLENE AT IOWA ARMY AMMUNITION PLANT

a. The purpose of this amendment is to revise the travel requirements, the due dates for the draft and final report, and extend the period of service. Therefore the following changes are hereby made to the contract:

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 21-Apr-2003

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION C - DESCRIPTIONS AND SPECIFICATIONS

The following have been modified:
SECTION C - STATEMENT OF WORK

STATEMENT OF WORK

Technical Evaluation of New Biofilter Technology Treating Xylene
At Iowa Army Ammunition Plant

1. INTRODUCTION: Hazardous air pollutants (HAPs) control is a high priority Army environmental requirement. Many HAPs are biodegradable. Biofiltration became a promising air pollution control technology for the removal of volatile organic compounds from waste gas streams due to its low cost when compared to conventional methods such as incineration and carbon adsorption. Among biofilters in practical use, conventional biofilters are most widely used. The major problem with existing biofilters is uneven distribution of air pollutants, nutrients, oxygen, and moisture to the biological films.

US Army Engineer Research and Development Center (ERDC) –Construction Engineering Research Laboratory (CERL) received two US patents on a new generation biofilter with rotating drum foam media. ERDC-CERL evaluated three bench scale rotating biofilters based on CERL concept and initial results showed that the rotating biofilter could achieve over 99% ether removal at organic loading rate of 8.0 KgCOD/m^3day. This biofilter was simpler to operate and more flexible in actual use as compared to conventional biofilters.

ERDC-CERL and Bioreaction Industry is building 100-200 CFM capacity rotating biofilters for pilot scale evaluation of xylene containing waste gas stream at Iowa Army Ammunition Plant.

2. OBJECTIVES: The objectives of this contract are: (1) to demonstrate that the new biofilter can effectively treat xylene containing gas emissions at Iowa Army Ammunition Plant (AAP), Burlington, IA, (2) to field-evaluate the performance of the new rotating biofilter at varying operational conditions, and (3) to provide field data to be used for technology transfer and commercialization.

3. MAJOR REQUIREMENTS: The Government and the Contractor understand and agree that the services to be delivered under this contract by the Contractor to the Government are non-personal services and the parties recognize and agree that no employer-employee or master-servant relationships exist or will exist under the contract between the Government and the Contractor's employees. In order for the Contractor to accomplish the work under this contract, it shall be necessary for the Contractor, as an independent Contractor, and not as an agent of the Government, to complete the following tasks:

a. Task 1: Characterize current air emissions from the xylene generation point at Iowa AAP. Determine minimum, normal, and maximum airflow rate and chemical compositions/concentrations. American Ordinance's (The Contractor running the Army Ammunition Plant) operation data will be available.

b. Task 2: Operate the biofilter. Iowa AAP operates only four days a week and provide chemicals/nutrient for optimum operation. The Contractor shall be responsible for all technical aspects of operations (all operations other than corrective maintenance.)

c. Task 3: Identify operational parameters and evaluate the performance of the biofilter at different operational conditions. Operational conditions include loading rate (mass, concentration), contact time, nutrient compositions and concentrations, top feed vs. bottom feed, RPM, water content on the media, pH, temperature, etc.

d. Task 4: Provide the start-up for the system. Biological film shall acclimate on the foam media. Ensure the system is optimally operated for demonstration and be responsible for sampling, analysis protocol development, chemical analysis, designated laboratory arrangement if necessary, and supplying necessary nutrients and chemicals. During start-up period, start with 20-50 % of the design flow rate for the first one or two weeks and gradually increase the air flow to minimize shock impact. An example nutrients solution is given as follows:

Component	Concentration **(Mg L^{-1})**	**Component**	Concentration **(Mg L^{-1})**
$NaNO_3$	100 as N	$CuCl_2.2H_2O$	0.0620
$NaH_2PO_4.2H_2O$	0.0323	4-Aminobenzoic Acid	0.0023
$NaHCO_3$	24.0	Biotin	0.00089
$FeCl_3$	0.0926	Cyanocobalamin (B_{12})	0.000046
$MgCl_2.6H_2O$	7.44	Folic Acid	0.00089
$CaCl_2.2H_2O$	2.03	Nicotinic Acid	0.0023
$KHSO_4$	12.4	D-Pantothenic Acid	0.0023
$(NH_4)_6Mo_7O_{24}$	0.0630	Pyriodoxine HCl	0.0046
$Na_4B_4O_7.10H_2O$	0.0348	Riboflavin	0.0023
$MnCl_2.4H_2O$	0.144	Thiamin HCl	0.0023
$CoCl_2.6H_2O$	0.0866	Thioctic Acid	0.0023
$ZnCl_2$	0.0990		

(Reference: Yang et al., "Removal of Diethyl Ether in a Rotating Drum Biofilter at High Organic Loading Rates" to be presented AWMA Annual Conference, Baltimore, MD, 2002)

e. Task 5: Determine and operate at the optimum conditions and provide recommendations to improve design of the biofilter and commercialization of the biofilter. Recommendations shall include but not to be limited to the following:

1. Workable pH range in the reactor (in nutrient water).

2. Analyze the performance of biofilter at varying operational conditions: loading rate (mass, concentration), contact time, nutrient compositions and concentrations, top feed vs. bottom feed, RPM, water content on the media, pH, temperature, nutrient water flow rate and detention time, impact of flow/concentration fluctuation.

3. Determination of monitoring parameters and sampling frequency requirements:

4. Chemical analysis and measurement: Inlet and outlet air flows, concentrations (including xylene and other pollutants), temperatures, pressures, pressure drop, humidity, treatment efficiencies, nutrient water flow rate and concentration of nitrite and nitrate and total nitrogen, biofilm accumulation pattern: visual observation and total volatile solids in unit media volume, mass balance for nitrogen and carbon, Media and moving part durability: at least daily visual observation

f. Task 6: Prepare a technical report and journal articles on all work performed under this contract. See Paragraph 8.

4. GOVERNMENT-FURNISHED MATERIALS: The Government will provide the new biofilters and test site at the Iowa Army Ammunition Plant.

5. CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR): The ERDC-CERL COTR is Dr. Byung Kim, (217-373-3481). The ERDC Contracting Officer for this acquisition is Ms. Deloras Adamson; email: d-adamson@cecer.army.mil; phone: 217/373-7297. No government personnel, other than the contracting officer, shall have the authority to do other than clarify technical points, or supply relevant information. Specifically no requirement in this specification may be altered as a sole result of such verbal clarification.

6. TRAVEL REQUIREMENTS: Round trip from University of Iowa, Iowa City, to Iowa AAP, Burlington, Iowa, for four times a week from date of biofilter installation through 30 June 2004.

7. MEETINGS/REVIEWS: The Contractor shall attend monthly progress meetings to be held at Iowa AAP. When CERL COTR requests, irregular meetings will be held as necessary at mutually acceptable dates and times.

8. REPORTS/DELIVERABLES: The contractor shall submit the following items to ERDC-CERL:

(a) Draft Report. One (1) copy of a draft report summarizing the research results shall be submitted to the CERL by 10 May 2004. CERL will review and provide comments, if any, within thirty (30) calendar days.

(b) Final Report. Three (3) hard copies and a diskette of the properly revised report shall be submitted within fifteen (15) days after receipt of review comments and approval of draft report. Diskette shall be 3 ½" using Word.

(c) Final Report: The final interim report shall summarize all the test results and be submitted by 30 June 2004.

(d) Monthly Progress Reports - One (1) typed letter report describing progress on the project in the format and content specified at http://owww.cecer.army.mil/contracts/formindex.html. The report shall be as of the last day of the month and shall be transmitted via electronic mail, telefacsimile, or regular mail no later than the 10th calendar day following the end of the reporting period. The first and last report may cover more than a month with prior concurrence of the government. Invoices for partial payment shall be submitted to coincide with receipt of the monthly progress reports. No partial payment will be approved unless the government has received all progress reports which are due.

9. PERIOD OF SERVICE: All work to be performed under this SOW shall be completed by 30 June 2004.

10. Security and National Agency Check: All Contractor employees (U.S. citizens and Non- U.S. citizens) working under this contract *(to include grants, cooperative agreements and task orders)* who require access to Automated Information Systems (AIS), (stand alone computers, network computers/systems, e-mail) shall, at a minimum, be designated into an ADP-III position (non-sensitive) in accordance with DoD 5220-22-R, Industrial Security Regulation. The investigative requirements for an ADP-III position are a favorable National Agency Check (NAC), SF-85P, Public Trust Position. The contractor shall have each applicable employee complete a SF-85P and submit to the ERDC-CERL Security Officer, Ms. Pat Lampo, within three (3) working days after award of any contract or task order, and shall be submitted prior to the individual being permitted access to an AIS. Contractors that have a commercial or government entity (CAGE) Code and Facility Security Clearance through the Defense Security Service shall process the NACs and forward visit requests/results of NAC to the ERDC-CERL Security Officer. For those contractors that do not have a CAGE Code or Facility Security Clearance, the ERDC-CERL Security Office will process the investigation in coordination with the Contractor and contract employees.

In accordance with Engineering Regulation, ER 380-1-18, Section 4, foreign nationals who work on Corps of Engineers' contracts or task orders shall be approved by the HQUSACE Foreign Disclosure Officer or higher before beginning work on the contract/task order. This regulation includes subcontractor employees. (NOTE: exceptions to the above requirement include foreign nationals who perform janitorial and/or ground maintenance services.) The contractor shall submit to the Division/District Contract Office, the names of all foreign nationals proposed for performance under this contract/task order, along with documentation to verify that he/she was legally admitted into the United States and has authority to work and/or go to school in the US. Such documentation may include a US passport, Certificate of US citizenship (INS Form N-560 or N-561), Certificate of Naturalization (INS Form N-550 or N-570), foreign passport with I-551 stamp or attached INS Form I-94 indicating employment authorization, Alien Registration Receipt Card with photograph (INS Form I-151 or I-551), Temporary Resident Card (INS Form I-688), Employment Authorization Card (INS Form I-688A), Reentry Permit (INS Form I-327), Refugee Travel Document (INS Form I-571), Employment Authorization Document issued by the INS which contains a photograph (INS Form I-688B).

SECTION F - DELIVERIES OR PERFORMANCE

The following Delivery Schedule item for CLIN 0001 has been changed from:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
31-DEC-2003		US ARMY CONSTRUCTION ENG RES L RECEIVING CLERK/(217) 373-4477 2902 FARBER DRIVE CHAMPAIGN IL 61822-1072 217 373-4477 FOB: Destination	SHIPADD

To:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
30-JUN-2004		US ARMY CONSTRUCTION ENG RES L RECEIVING CLERK/(217) 373-4477 2902 FARBER DRIVE CHAMPAIGN IL 61822-1072 217 373-4477 FOB: Destination	SHIPADD

(End of Summary of Changes)